

WHAT IS CLAIMED IS:

1. A method for performing a handoff from an async base station to a sync base station when a mobile station with async and sync demodulation modules
5 travels from a present cell of the async base station to a cell of the sync base station, the method comprising the steps of:

driving the sync demodulation module in the mobile station for a given idle sleep time to acquire and maintain the timing of the sync base station, during an operation in the cell of the async base station;

10 during the handoff, measuring in the mobile station the strengths of pilot signals from adjacent sync base stations based on the acquired timing, and sending the measurement results to the async base station;

receiving in the mobile station from the async base station information necessary to establish a traffic channel with the sync channel; and

15 performing handoff in the mobile station to the sync base station according to the information necessary to establish the traffic channel.

2. The method as claimed in claim 1, wherein the timing of the sync base station includes PN short code timing and PN long code timing.

20 3. The method as claimed in claim 1, further comprising the step of updating the timing based on the timing when the maximum value of the measured strengths of the pilot signals exceeds a threshold value.

25 4. A method for performing a handoff from an async base station to a sync base station when a mobile station with async and sync demodulation modules travels from a present cell of the async base station to a cell of the sync base station, the method comprising the steps of:

the async base station informing the mobile station entering the cell of the
30 async base station that there exist adjacent sync base stations;

driving the sync demodulation module in the mobile station for a given idle

sleep time to acquire and maintain the timing of the sync base station, during an operation in the cell of the async base station;

during the handoff, the async base station sending information about the adjacent sync base stations to the sync base station;

5 the mobile station measuring the strengths of pilot signals from the adjacent sync base stations based on the acquired timing of the sync base station, and sending the measurement results to the async base station;

the mobile station receiving from the async base station information necessary to establish a traffic channel with the sync channel; and

10 the mobile station performing handoff to the sync base station according to the information necessary to establish the traffic channel.

5. The method as claimed in claim 4, wherein the timing acquisition step comprises the steps of:

15 acquiring the pilot signal of the sync base station for the given idle sleep time to acquire the reference timing of a pseudo-noise (PN) short code; and

demodulating the sync channel of the sync base station for the given idle sleep time to acquire the timing of a PN long code.

20 6. The method as claimed in claim 5, further comprising the step of, when the pilot signal cannot be acquired for the idle sleep time, requesting the async base station for a pilot acquisition time and, if granted, acquiring the pilot signal for the given time allowed by the async base station to acquire the timing of a PN short code.

25 7. The method as claimed in claim 5, further comprising the step of, when the sync channel cannot be demodulated for the idle sleep time, requesting the async base station for a sync channel demodulation time and, if granted, demodulating the sync channel for the given time allowed by the async base station to acquire the timing of a PN long code.

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8. A mobile station device comprising:

an async demodulation module for converting a high-frequency signal from an async base station to a baseband signal and demodulating the baseband signal by despreading;

5 a sync demodulation module for converting a high-frequency signal from a sync base station to a baseband signal and demodulating the baseband signal by despreading;

a switch for switching the received signal between the async and sync demodulation modules; and

10 a controller for driving the sync demodulation module for a given time interval to acquire the timing of the sync base station during an operation in the cell of an async base station, and maintaining the acquired timing of a sync base station even after switching to the async demodulation module.